

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Date: March 16, 2004

In re Application of:

DAVID J. EDLUND, CHARLES R. HILL, WILLIAM A. PLEDGER and  
R. TODD STUDEBAKER

Filed : March 16, 2004

For : HYDROGEN PURIFICATION DEVICES, COMPONENTS AND  
FUEL PROCESSING SYSTEMS CONTAINING THE SAME

Commissioner for Patents  
P.O. Box 1450  
Alexandria, Virginia 22313-1450

Sir:

**INFORMATION DISCLOSURE STATEMENT**  
**UNDER 37 C.F.R. §§ 1.56, 1.97, and 1.98**

Applicants are submitting this Information Disclosure Statement pursuant to 37 C.F.R. §§ 1.56, 1.97, and 1.98 to disclose to the U.S. Patent Office the patents, publications, applications, and/or other references listed on the enclosed, completed PTO-1449 forms. The filing of this Information Disclosure Statement should not be construed as a representation that a search has been made or as an admission that the listed references are prior art for this application. Applicants respectfully request that the listed references be expressly considered during prosecution of the application, and that the references be made of record therein and appear among the "references cited" on any patents issuing therefrom.

This Information Disclosure Statement includes 14 pages of PTO-1449 forms; however, as permitted under 37 C.F.R. § 1.98(d), it does not include copies of the references that were provided in earlier U.S. applications (Serial No. 10/439,843, Serial No. 10/086,680, now U.S. Patent No. 6,569,227, Serial No. 10/067,275, now U.S. Patent No. 6,562,111, Serial No.

09/967,172, now U.S. Patent No. 6,494,937, and Serial No. 10/003,164, now U.S. Patent No. 6,458,189) that are relied on here for an earlier effective filing date under 35 U.S.C. § 120.

This Information Disclosure Statement includes legible copies of three foreign references and one non-patent reference, because these references were not provided in an earlier U.S. application. Because this application is being filed on or after July 1, 2003, no copies of U.S. patents or published U.S. patent applications are included.

A concise explanation of the relevance of each listed reference not in the English language follows:

Japanese Patent No. 45-14404 was listed on the face sheet to U.S. Patent No. 5,888,273 and no translation or English language abstract was provided. The patent appears to disclose a gas purification unit having a plurality of membrane tubes 1 through which a feed stream 4 is separated into streams 3C and 6.

Japanese Patent No. 45-2642 was listed on the face sheet to U.S. Patent No. 5,888,273 and no translation or English language abstract was provided. The patent appears to disclose a gas purification unit in which a feed stream 3 is passed through several passages to separation membranes, where the feed stream is separated to form streams 4 and 17. Applicant understands that reference numeral 1 refers to a flange, reference numeral 2 refers to a base, reference numeral 3 refers to a source gas introduction line, reference numeral 4 refers to a gas exhaust line, reference numeral 5 refers to a cylinder, reference numeral 6 refers to a guide structure, reference numeral 7 refers to an impure gas introduction control, reference numeral 8 refers to a square pipe, reference numeral 9 refers to a square-shaped hydrogen permeable board, reference numeral 10 refers to a palladium alloy membrane, reference numeral 11 refers to a support board, reference numeral 12 refers to a peripheral weld, reference numeral 13 refers to a

pure hydrogen extractor, reference numeral 14 refers to a flange, reference numeral 15 refers to a pure hydrogen mixture chamber, reference numeral 16 refers to a passage member, reference numeral 17 refers to a pure hydrogen mixture extraction nozzle, reference numeral 18 refers to a cover, reference numeral 19 refers to an electric heater, reference numeral 20 refers to a source gas preparatory heating portion for heating gas outside the outer wall of the square pipe and inside the inner wall of the circular pipe, and reference numeral 21 refers to an insert for an electric heater to regulate the temperature of the pure hydrogen permeable cell.

Japanese Patent No. 57-145276, for which Applicants do not have an English-language abstract or translation, appears to disclose a schematically illustrated system that includes a burner 5 and various valves 8. Applicants are not aware of the function of the other components.

Japanese Patent No. 6-134244 was listed on the face sheet to U.S. Patent No. 5,888,273 and no translation or English language abstract was provided. The patent appears to disclose a gas purification unit in which a feed stream is separated into plural streams.

English-language abstracts of Japanese Patents Nos. JP 1-145302, JP 1-145303, JP 1-262903, JP 3-242231 and JP 4-338101, and PCT International Patent Application No. PCT/DE97/00880 (WO 97/43796) are already of record in the previously cited applications identified above.

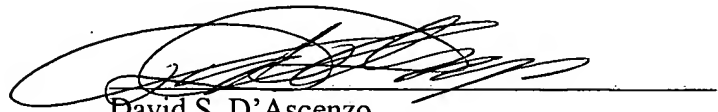
Although resubmission of print copies of the previously submitted references listed on the enclosed PTO-1449 forms is not required, the Examiner is invited to contact Applicants' undersigned attorney if print copies of the previously submitted references would be helpful to advance prosecution of the present application.

This Information Disclosure Statement is being filed with the application. Therefore, in accordance with 37 C.F.R. § 1.97(b), no fee or statement under 37 C.F.R. § 1.97(e) is required.

Please contact the undersigned with any questions or comments regarding this Information Disclosure Statement.

Respectfully submitted,

KOLISCH HARTWELL, P.C.

A handwritten signature in black ink, appearing to read 'David S. D'Ascenzo', is written over a horizontal line.

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FORM PTO-1449  INFORMATION DISCLOSURE CITATION IN AN APPLICATION			DOCKET NUMBER  NPW 329C		APPLICATION NUMBER		
			APPLICANTS DAVID J. EDLUND, CHARLES R. HILL, WILLIAM A. PLEDGER and R. TODD STUDEBAKER				
			FILING DATE March 16, 2004		GROUP ART UNIT		
U.S. PATENT DOCUMENTS							
EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUB CLASS	FIL. DATE IF APPROP.	
	2,824,620	2/25/1958	De Rosset				
	2,958,391	11/1/1960	De Rosset				
	3,144,312	8/11/1964	Mertens				
	3,208,198	9/28/1965	Rubin				
	3,336,730	8/22/1967	McBride et al.				
	3,338,681	8/29/1967	Kordesch				
	3,350,176	10/31/1967	Green et al.				
	3,368,329	2/13/1968	Eguchi et al.				
	3,428,476	2/18/1969	Langley et al.				
	3,439,474	4/22/1969	McKinley				
	3,447,288	6/3/1969	Juda et al.				
	3,450,500	6/17/1969	Setzer et al.				
FOREIGN PATENT DOCUMENTS							
	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB CLASS	TRANSLATION YES NO	
	GB 1032132	6/1966	United Kingdom			X	
	JP 45-14404	5/1970	Japan				X
OTHER DOCUMENTS							
		English-language abstract of Japanese Patent No. 1-262903, 1989.					
		English-language abstract of Japanese Patent No. 3-242231, 1991.					
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EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUB CLASS	FIL. DATE IF APPROP.
	3,469,944	9/30/1969	Bocard et al.			
	3,520,803	7/21/1970	Iaconelli			
	3,534,531	10/10/1970	Eguchi et al.			
	3,564,819	2/23/1971	Neulander et al.			
	3,665,680	5/30/1972	Heuser			
	3,713,270	1/30/1973	Farr et al.			
	3,761,382	9/25/1973	Hammond et al.			
	3,787,038	1/22/1974	Tesner et al.			
	3,881,891	5/6/1975	Goltsov et al.			
	3,881,897	5/6/1975	Faure et al.			
	3,920,416	11/18/1975	Houseman			
	3,955,941	5/11/1976	Houseman et al.			
FOREIGN PATENT DOCUMENTS						
	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB CLASS	TRANSLATION YES NO
	JP 45-2642	9/1970	Japan			
	JP 57-145276	9/1982	Japan			
OTHER DOCUMENTS						
		English-language abstract of Japanese Patent No. 432150, 1992.				
		English-language abstract of Japanese Patent No. 513230, 1993.				
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	3,972,695	8/3/1976	Buckley et al.			
	3,982,910	9/28/1976	Houseman et al.			
	4,003,725	1/18/1977	Bunn, Jr. et al.			
	4,056,373	11/1/1977	Rubin			
	4,084,934	4/18/1978	Kumazawa			
	4,098,959	7/4/1978	Fanciullo			
	4,132,668	1/2/1979	Gryaznov et al.			
	4,134,739	1/16/1979	Gulden et al.			
	4,238,403	12/9/1980	Pinto			
	4,248,688	2/3/1981	Gartner et al.			
	4,254,086	3/3/1981	Sanders			
	4,302,177	11/24/1981	Fankhanel et al.			
FOREIGN PATENT DOCUMENTS						
	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB CLASS	TRANSLATION YES NO
	JP 1-145302	6/1989	Japan			
	JP 1-145303	6/1989	Japan			
OTHER DOCUMENTS						
		English-language abstract of Japanese Patent No. 514790, 1993.				
		English-language abstract of Japanese Patent No. 604070, 1994.				
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	4,319,923	3/16/1982	Falanga et al.				
	4,331,520	5/25/1982	Juda et al.				
	4,422,911	12/27/1983	Juda et al.				
	4,430,304	2/7/1984	Spurrier et al.				
	4,468,235	8/28/1984	Hill				
	4,472,176	9/18/1984	Rubin				
	4,473,622	9/25/1984	Chludzinski et al.				
	4,504,447	3/12/1985	Spurrier et al.				
	4,533,607	8/6/1985	Sederquist				
	4,567,857	2/4/1986	Houseman et al.				
	4,583,583	4/22/1986	Wittel				
	4,589,891	5/20/1986	Iniotakis et al.				
FOREIGN PATENT DOCUMENTS							
	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB CLASS	TRANSLATION YES NO	
	JP 1-262903	10/1989	Japan				X
	EP 0434562 B1	6/26/1991	EPO			X	
OTHER DOCUMENTS							
		English-language abstract of Japanese Patent No. 634540.					
		English-language abstract of Japanese Patent No. 710910, 1995.					
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	4,613,436	9/23/1986	Wight et al.				
	4,654,063	3/31/1987	Auvil et al.				
	4,655,797	4/7/1987	Iniotakis et al.				
	4,657,828	4/14/1987	Tajima				
	4,659,634	4/21/1987	Struthers				
	4,699,637	10/13/1987	Iniotakis et al.				
	4,713,234	12/15/1987	Weirich et al.				
	4,788,004	11/29/1988	Pinto et al.				
	4,810,485	3/7/1989	Marianowski et al.				
	4,838,897	6/13/1989	Amano et al.				
	4,849,187	7/18/1989	Uozu et al.				
	4,865,624	9/12/1989	Okada				
FOREIGN PATENT DOCUMENTS							
	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB CLASS	TRANSLATION YES NO	
	JP 3-242231	10/1991	Japan				X
	JP 4-338101	11/1992	Japan				X
OTHER DOCUMENTS							
		English-language abstract of Japanese Patent No. 828793, 1996.					
		English-language abstract of Japanese Patent No. 11116202, 1999.					
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	4,981,676	1/1/1991	Minet et al.			
	4,999,107	3/12/1991	Guerif			
	5,126,045	6/30/1992	Kohlheb et al.			
	5,139,541	8/18/1992	Edlund			
	5,158,581	10/27/1992	Coplan			
	5,205,841	4/27/1993	Vaiman			
	5,215,729	6/1/1993	Buxbaum			
	5,217,506	6/8/1993	Edlund et al.			
	5,225,080	7/6/1993	Karbachsch et al.			
	5,226,928	7/13/1993	Makabe et al.			
	5,229,102	7/20/1993	Minet et al.			
	5,259,870	11/9/1993	Edlund			
FOREIGN PATENT DOCUMENTS						
	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB CLASS	TRANSLATION YES NO
	JP 6-134244	5/1994	Japan			
	WO 97/43796	11/1997	WIPO			
OTHER DOCUMENTS						
		English-language abstract of Japanese Patent No. 1-145302.				
		English-language abstract of Japanese Patent No. 1-145303.				
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	5,326,550	7/5/1994	Adris et al.				
	5,354,547	10/11/1994	Rao et al.				
	5,376,167	12/27/1994	Broutin et al.				
	5,382,271	1/17/1995	Ng et al.				
	5,393,325	2/28/1995	Edlund				
	5,401,589	3/28/1995	Palmer et al.				
	5,432,710	7/11/1995	Ishimaru et al.				
	Re. 35,002	7/25/1995	Matsubara et al.				
	5,449,848	9/12/1995	Itoh				
	5,458,857	10/17/1995	Collins et al.				
	5,498,278	3/12/1996	Edlund				
	5,500,122	3/19/1996	Schwartz				
FOREIGN PATENT DOCUMENTS							
	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB CLASS	TRANSLATION YES NO	
	WO 99/30806	6/1999	WIPO			X	
	WO 99/65097	12/1999	WIPO			X	
OTHER DOCUMENTS							
		English-language abstract of Japanese Patent No. 4-338101.					
		English-language abstract of Great Britain Patent No. 2,305,186.					
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	5,516,344	5/14/1996	Corrigan				
	5,518,530	5/21/1996	Sakai et al.				
	5,520,807	5/28/1996	Myrna et al.				
	5,525,322	6/11/1996	Willms				
	5,536,405	7/16/1996	Myrna et al.				
	5,580,523	12/3/1996	Bard				
	5,589,599	12/31/1996	McMullen et al.				
	5,614,001	3/25/1997	Kosaka et al.				
	5,637,259	6/10/1997	Galuszka et al.				
	5,637,414	6/10/1997	Inoue et al.				
	5,639,431	6/17/1997	Shirasaki et al.				
	5,645,626	7/8/1997	Edlund et al.				
FOREIGN PATENT DOCUMENTS							
	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB CLASS	TRANSLATION YES NO	
	WO 00/27507	5/2000	WIPO			X	
	EP 1065741 A2	1/3/2001	EPO			X	
OTHER DOCUMENTS							
		English-language abstract of German language PCT Patent Application Serial No. WO 97/43796, 1997.					
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EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUB CLASS	FIL. DATE IF APPROP.	
	5,679,249	10/21/1997	Fendya et al.				
	5,703,359	12/30/1997	Wampler, III				
	5,734,092	3/31/1998	Wang et al.				
	5,738,708	4/14/1998	Peachey et al.				
	5,741,474	4/21/1998	Isomura et al.				
	5,741,605	4/21/1998	Gillett et al.				
	5,782,960	7/21/1998	Ogawa et al.				
	5,795,666	8/18/1998	Johnssen				
	5,811,065	9/22/1998	Sterenber				
	5,821,185	10/13/1998	White et al.				
	5,833,723	11/10/1998	Kuwabara et al.				
	5,858,314	1/12/1999	Hsu et al.				
FOREIGN PATENT DOCUMENTS							
	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB CLASS	TRANSLATION YES NO	
	WO 01/28662	4/2001	WIPO			X	
	WO 01/83086	11/2001	WIPO			X	
OTHER DOCUMENTS							
		Adris, A. M., et al., "A Fluidized Bed Membrane Reactor for the Steam Reforming of Methane," The Canadian Journal of Chemical Engineering, Vol. 69, pp. 1061-70 (October, 1991).					
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U.S. PATENT DOCUMENTS						
EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUB CLASS	FIL. DATE IF APPROP.
	5,861,137	1/19/1999	Edlund			
	5,874,051	2/23/1999	Heil et al.			
	5,888,273	3/30/1999	Buxbaum			
	5,891,222	4/6/1999	Hilgendorff et al.			
	5,904,754	5/18/1999	Juda et al.			
	5,931,987	8/3/1999	Buxbaum			
	5,932,181	8/3/1999	Kim et al.			
	5,938,800	8/17/1999	Verrill et al.			
	5,997,594	12/7/1999	Edlund et al.			
	5,998,053	12/7/1999	Diethelm			
	6,042,956	3/28/2000	Lenel			
	6,045,772	4/4/2000	Szydlowski et al.			
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	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB CLASS	TRANSLATION YES NO
OTHER DOCUMENTS						
		Chai, M., et al., "Promotion of Methane Steam Reforming Using Ruthenium-Dispersed Microporous Alumina Membrane Reactor," Chemistry Letters, The Chemical Society of Japan, pp. 41-44 (1993).				
		"Compact, Lightweight Fuel Reformer for Fuel Cells," Argonne National Laboratory/U.S. Department of Energy (July, 1996).				
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	6,077,620	6/20/2000	Pettit			
	6,083,637	7/4/2000	Walz et al.			
	6,103,028	8/15/2000	Juda et al.			
	6,103,411	8/15/2000	Matsubayashi et al.			
	6,152,995	11/28/2000	Edlund			
	6,165,633	12/26/2000	Negishi			
	6,168,650	1/2/2001	Buxbaum			
	6,171,574	1/9/2001	Juda et al.			
	6,183,543	2/6/2001	Buxbaum			
	6,190,623	2/20/2001	Sanger et al.			
	6,201,029	3/13/2001	Waycuilis			
	6,221,117	4/24/2001	Edlund et al.			
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OTHER DOCUMENTS						
		Edlund, Dr. David and William Pledger, "Development of a Compact and Economical Steam Reformer for Fuel-Cell Systems," Fifth Grove Fuel Cell Symposium, Commonwealth Institute, London, U.K., p. 6 (September 22-23, 1997).				
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	6,231,831	5/15/2001	Autenrieth et al.			
	6,238,465	5/29/2001	Juda et al.			
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	6,332,913	12/25/2001	Breitschwerdt et al.			
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		Edlund, David J. and William A. Pledger, "The Practical Use of Metal-Membrane Reactors for Industrial Applications," The 1995 Membrane Technology Reviews, pp. 89-97 (November, 1994).				
		Knapton, A. G., "Palladium Alloys for Hydrogen Diffusion Membranes," Platinum Metals Review, Vol. 21, 44-50 (1977).				
		Ledjeff-Hey, K., et al., "Compact Hydrogen Production Systems for Solid Polymer Fuel Cells," Fifth Grove Fuel Cell Symposium, Commonwealth Institute, London, U.K., p. 17 (September 22-25, 1997).				
		Menzer, R., et al., "Fuel Processing in Fuel Cell Systems for Mobile Applications - Gasoline as Energy Carrier On-Bord," Fifth Grove Fuel Cell Symposium, Commonwealth Institute, London, U.K., (no page no.), (September 22-25, 1997).				
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	6,458,189	10/1/2002	Edlund et al.			
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U.S. PATENT DOCUMENTS						
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